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Claims PTO/tw

10/15/04

1. (Amended) A method for producing a transducer slider, comprising [the steps of]:

- (a) coating a substrate with a radiation-sensitive layer;
- (b) imagewise exposing the radiation-sensitive layer to radiation according to an intensity pattern;
 - (c) developing the image into the radiation-sensitive layer; and
- (d) transferring the image into the substrate to form a transducer slider having a surface profile comprising a tapered edge.
- 2. (Amended) The method of claim 1, wherein [step (a) comprises spin coating a] the radiation-sensitive composition is spin coated on the substrate.
- 3. (Amended) The method of claim 2, [further comprising, after step (a) and before step (b), (a') applying] wherein heat is applied to the radiation-sensitive layer after (a) and before (b).
- 4. (Amended) The method of claim 3, wherein [step (a')] the application of heat results in solvent evaporation from the radiation-sensitive layer.
- 5. The method of claim 1, wherein the radiation-sensitive layer is a positive resist.

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- 6. The method of claim 1, wherein the radiation-sensitive layer is a low contrast resist.
- 7. The method of claim 1, wherein the radiation-sensitive layer has a thickness α about 1 to about 20 μm .
- 8. The method of claim 7, wherein the radiation-sensitive layer has a thickness o about 2 to about 10 μm .
 - 9. The method of claim 1 wherein the radiation is photonic
 - 10. The method of claim 1, wherein the radiation has a ultraviolet wavelength.
- 11. The method of claim 1, wherein the intensity pattern is provided using a grayscale mask.
- 12. The method of claim 11, wherein the patterned grayscale mask is electron-beam sensitive.
- 13. The method of claim 12, wherein the tapered edge corresponds to a portion of the patterned gray scale mask that has not been exposed to an electron beam.

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14. (Amended) The method of claim 1, [further comprising, after step (b) and before step (c), (b')] wherein [applying] a solvent is applied to the radiation-sensitive layer after (b) and before (c).

- 15. (Amended) The method of claim 14, wherein the image is developed into the exposed portion of the radiation-sensitive layer by the solvent [develops the exposed portion of the radiation-sensitive layer in step] during (c).
- 16. (Amended) The method of claim 1, wherein [step (c) comprises exposing] the substrate is exposed to an etchant during (c).
 - 17. The method of claim 16, wherein the etchant comprises a gas.
 - 18. The method of claim 17, wherein the gas comprises plasma.
 - 19. The method of claim 18, wherein the plasma is argon based.
 - 20. The method of claim 16, wherein the etchant comprises a liquid.
 - 21. The method of claim 15, wherein the etchant is an isotropic etchant.
- 22. (Amended) The method of claim 1, wherein [step (d) further comprises] simultaneous removal of the patterned layer is carried out during (d).

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- 23. The method of claim 1, wherein the substrate comprises a ceramic material.
- 24. The method of claim 23, wherein the ceramic material comprises a carbide.
- 25. The method of claim 24, wherein the carbide is selected from the group consisting of aluminum carbide, silicon carbide, titanium carbide, boron carbide, geranium carbide, tungsten carbide, and mixed-metal carbide.
 - 26. The method of claim 23, wherein the ceramic material comprises a nitride.
 - 27. The method of claim 23, wherein the ceramic material comprises an oxide.
- 28. A structure for forming a transducer slider, comprising a substrate and a patterned layer thereon having a tapered edge, wherein the patterned layer corresponds to a predetermined transducer slider surface profile.
- 31. The structure of claim 28, wherein the predetermined transducer slider surface profile contains no exposed sharp edge.
- 32. The structure of claim 28, wherein the predetermined transducer slider surface profile contains two portions that intersect at an angle of about 0.5 to about 10 degrees.
 - 33. The structure of claim 32, wherein the angle from about 1 to about 5 degrees.

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34. (Amended) A method for producing a plurality of transducer sliders, comprising [the steps of]:

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- (a) coating a substrate with a photosensitive layer;
- (b) exposing the photosensitive layer to curing radiation according to a patterned grayscale mask to convert the photosensitive layer into a patterned layer having a tapered edge;
- (c) removing material from the substrate according to the patterned layer to form a surface profile comprising a tapered edge that corresponds to the tapered edge of the patterned layer; and
 - (d) sectioning the substrate into a plurality of transducer sliders.
- 35. (Amended) The method of claim 34, [further comprising, before step (a), assembling] wherein the substrate is assembled from a plurality of components before (a) that [after step (d)] will represent the plurality of transducer sliders after (d).
- 36. The method of claim 35, wherein the plurality of components are substantially identical.
- 37. The method of claim 36, wherein the plurality of components are assembled in an array.
- 38. The method of claim 37, wherein the array is rectilinear.

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- 39. (Amended) The method of claim 35, [further comprising, before step (a), (e) cutting a] wherein a monolithic solid member is cut into the plurality of components before (a).
 - 40. (Amended) A method for producing a transducer slider, comprising [the steps of]:
 - (a) coating a substrate with a radiation-sensitive layer;
- (b) imagewise exposing the radiation-sensitive layer to radiation according to an intensity pattern;
 - (c) developing the image into the radiation-sensitive layer; and
- (d) transferring the image into the substrate to form a transducer slider having a surface profile comprising a rounded corner.

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